

Vaccine Management

Handling and Storage Details
for Vaccines





Introduction

Keeping vaccines at the proper temperature at all times is called **maintaining the cold chain**. The “cold chain” starts at the manufacturer, and continues until the vaccine is used. It is just as important to keep vaccines which should not be frozen from freezing, as it is to keep other vaccines from getting too warm. **It is up to everyone to see that the “cold chain” is not broken.**

Vaccines must be refrigerated at recommended temperatures to maintain the cold chain. However, it is often taken for granted that a refrigerator/freezer takes care of vaccine storage. Problems may occur with the way vaccines are stored in clinics, due to a malfunction of equipment, or errors by staff who have not received necessary training.

Replacing compromised vaccines can be costly in time and money. Furthermore, there may be a need to search records to determine which patients were given potentially “spoiled” vaccines and who might need to be re-vaccinated. Further time must then be spent dealing with anguished or annoyed patients or parents who have to return to the clinic for re-vaccination. By having the right equipment, trained staff, and written standard operating procedures for handling vaccines in all situations, many of these problems can be avoided.

Table of Contents

Section 1: Handling Vaccines

Equipment:

Refrigerator and Freezer Page 4

Thermometers Page 4

Security Page 6

Personnel: Page 7

Standard Operating Procedures (SOP's): Page 8

Routine Vaccine Handling Plan Page 11

Emergency Vaccine Handling Plan Page 11

Avoiding Problems: Page 12

Attachments:

Temperature Log

Routine and Emergency Vaccine Handling Plans TEMPLATE

Section 2: Emergency Response

Emergency Response Page 13

Attachments:

Vaccine Spoilage Checklist

Emergency Response Worksheet

Section 3: Transporting Vaccines

Vaccine Packing and Shipping Page 15

Solid Carbon Dioxide (Dry Ice) Page 15

Section 4: Vaccine Management

Recommendations for Handling and Storage
of Selected Biologicals Pages 29

Section 5: Other Resources

More on Immunizations Page 31

Protect Your Vaccine Supply! Page 32

Vaccine Manufacturer Numbers Page 33

Equipment

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Refrigerator and Freezer:



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Refrigerator and Freezer:

- * A standard household style refrigerator/freezer unit is sufficient for storage of vaccines. *Dormitory style refrigerator/freezers are not recommended* because they do not maintain adequate temperatures. While, the Kansas VFC Program will allow a dormitory style refrigerator to be used for storage of refrigerated vaccines, it may not be used for storage of Varicella (chickenpox) vaccine. Certification of proper storage for Varicella is required.
- * The refrigerator compartment should maintain temperatures between 35° -46° Fahrenheit [F] (2° -8° Celsius [C]). Since temperatures should never reach below 32° F (0° C), set the temperature mid-range, about 40° F (5° C) to provide the best safety margin. The freezer compartment should maintain temperatures at or below 5° F (-15° C).
- * Frost-free freezers are acceptable. If the freezer is not frost-free, ice

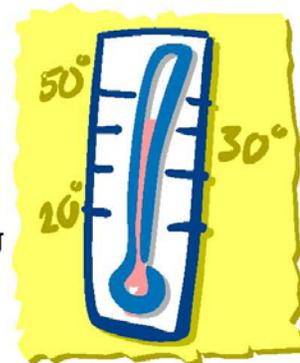
should not be allowed to build-up more than 1/4 inch. When defrosting the freezer, use a temporary back-up freezer for vaccine storage.

- * If the refrigerator/freezer unit is new or just repaired, allow one week of recorded temperature checks within normal ranges before placing vaccines into the unit.
- * Frequently opening the door interrupts the cold chain. It is recommended to store water bottles in the refrigerator door and ice packs in the freezer to help maintain a stable temperature.
- * Never store food, beverages or specimens in the same unit as vaccines. This interferes with proper temperature control and may contaminate vaccines.
- * Vaccines should be stored in the center of the refrigerator/freezer. Do not store them in the doors, air-tight containers, or crispers. Open-weave, plastic storage baskets are recommended.

CAUTION: Most vaccines in the refrigerator may be quickly damaged if the unit is set too cold and vaccines freeze.

Thermometers:

It's important that vaccines be kept at the proper temperature at all times. In order to ensure that the refrigerator and freezer are maintaining proper temperatures, each unit should have a thermometer. Visually check thermometers twice a day, once in the morning and once in the evening, and record those temperatures on a log (enclosed in this **booklet**), regardless of the type of thermometer used. This is the most effective method of identifying inconsistent or fluctuating temperatures in a refrigerator/ freezer. Thermometers provide the most useful information about actual storage temperatures and can alert you to possible equipment malfunctions.



There are many different types of thermometers. Any of the following thermometers are adequate for recording temperatures of your refrigerator and freezer. However, the Kansas VFC Program recommends using thermometers that are certified and calibrated.

- * **Standard Fluid Filled:** very easy to see and read temperature.
- * **Dial:** most common, but not the most accurate
- * **Minimum/Maximum:** tells the highest and lowest temperatures reached, but can be difficult to read.
- * **Digital:** very easy to read and some come with an alarm, but the temperature probe must be placed in the proper location inside the unit in order to get an accurate reading.
- * **Continuous Reading:** will record the temperature inside the unit at all times, 24 hours a day, on a sheet of paper, but the paper must be changed when it is running low. Using this thermometer is the most effective method of tracking the refrigerator/freezer temperature over time.

Security:

Considering the high cost of vaccines, it is important to have a system in place to ensure the refrigerator/freezer maintains proper temperatures and the “cold chain” remains unbroken.

- * Install a security/alarm system which will give a warning if the temperatures rise or fall outside normal ranges. Some systems can alert a guard or notify designated staff.
- * Invest in a back-up generator that automatically provides power to maintain the temperature in the refrigerator/freezer should there be a power outage.
- * Prepare a written plan of action in the event of a power outage. Make sure all staff know and understand the plan.
- * Install a lock on the refrigerator/freezer plug to ensure that it doesn't accidentally get unplugged.
- * Place a warning sign at the plug and another at the circuit breaker to ensure that the refrigerator/freezer power is not turned off.





Personnel

Good vaccine storage and handling depends on the knowledge and habits of the clinic staff.

- * Designate a trained person to be “in charge” of vaccines. In addition, train and designate a “back-up” person.
- * Everyone involved in vaccines should be trained on the following:
 - √ Correct storage temperatures of each vaccine.
 - √ Proper handling conditions for each vaccine.
 - √ How to read temperature gauges.
 - √ What to do with vaccines in an emergency situation.
- * Ensure new employees receive and understand all necessary training regarding vaccines.

Standard Operating Procedures (SOP's)

Proper training ensures that everyone handling vaccines knows how to **protect** them!



It is important to have written procedures to help you stay organized and to provide quality assurance (QA). Clinics should establish a set of procedures for both daily and emergency situations.

Routine Vaccine Handling Plan:

A routine vaccine handling plan includes operations that take place on a continuous basis and helps prevent vaccine loss due to errors. You must:

- * Maintain proper temperatures for storage of vaccines. Refrigerator: 35°-46° F (2°-8° C) Freezer: ≤5°F (≤ -15° C).
- * Maintain a daily log of temperature checks, twice a day, beginning and end of the day, regardless of the thermometer used. ([Use the temperature log included in this booklet](#))
- * Maintain an ongoing file of temperature logs, do not throw them away.
- * Open vaccine shipments as soon as they arrive and store appropriately.
- * Label "VFC" vaccines and store on a separate shelf from private stock

of vaccines.

- * Conduct monthly inventory counts.
- * Store and rotate vaccines according to expiration dates and use vaccines with the shortest expiration dates first.
- * If vaccines are within 90 days of expiration and will not be used, they should be transferred to another VFC Provider. Contact the Kansas VFC Program for prior approval and assistance.
- * Order vaccines sensibly, do not over order.
- * Check refrigerator/freezer doors to assure they are closed and, if possible, padlocked at the end of each day.
- * Advise maintenance and cleaning personnel not to unplug storage units. Place “**Do Not Unplug**” signs near the outlet and install safety outlet covers.



Emergency Vaccine Handling Plan:

An emergency vaccine handling plan includes operations to follow so vaccines are protected in the event of a power outage or equipment failure. This plan should assure vaccines are stored properly as quickly as possible. It should specify:

- * Personnel designated “in charge” of vaccines have 24-hour access to building and refrigerator/freezer units in which vaccines are stored.
- * How designated personnel are notified in the event of a vaccine storage emergency.
- * Steps personnel should follow for proper storage & handling of vaccines when the emergency occurs.

Prevent loss of vaccines by preparing for power outages and equipment failures.

- * Alternate storage units and facilities (e.g., a back-up refrigerator, the fire department, a nearby hospital, or another provider, etc.) and procedures that personnel should follow to access those units and facilities.
- * A refrigerator/freezer repair company, their phone number, and the refrigerator/freezer brand name & serial number.

Your emergency vaccine handling plan should be **in writing** and all staff should be required to review the emergency plan annually. Enclosed is a template that can be used to assist with developing your vaccine handling plans.



Avoiding Problems - Key Points

Take a few extra precautions to ensure the quality and effectiveness of your vaccines.

Following are some reminders of key points & basic tips:

- √ Train one person and one back-up person for vaccine care.
- √ Maintain daily log of temperature checks.
- √ Don't record temperatures out of range and do nothing. If temperatures are out of range.
- √ Make necessary adjustments or call the Kansas VFC Program for assistance.
- √ Conduct monthly inventory counts.
- √ Store and rotate vaccines according to expiration date.
- √ Don't use expired or "potentially spoiled" vaccines.
- √ Label vaccines "VFC" & store on a separate shelf.
- √ Establish routine and emergency vaccine handling plans.
- √ Post "Do Not Unplug" signs by plug & circuit breaker.
- √ Provide back-up power and an alarm system, if possible.
- √ Store extra ice packs along the walls, back, and in the door of the freezer and water bottles in the refrigerator. This will help maintain the temperature during a power outage.
- √ Don't store vaccine in the refrigerator/freezer door or crispers.

Emergency Response

Just because a refrigerator/freezer is plugged in and running doesn't mean everything is fine and vaccines are safe. No refrigerator is perfect and accidents can happen.



In the event of equipment breakdown or power outage follow these Kansas VFC Program guidelines:

- * Make every attempt to move the vaccine supply to another refrigeration unit as soon as possible.
- * Any vaccine that has reached temperatures outside of the recommended range, either too warm or too cold, should be placed in refrigeration at the proper temperatures. Keeping a supply of styrofoam containers and ice packs is recommended for short-term storage or transporting vaccines.
- * Clearly mark and separate potentially spoiled vaccine from the undamaged supply, so it can be easily identified later.
- * The vaccine should not be used until the Kansas VFC Program or vaccine manufacturer has been contacted for instructions on how to proceed. This will reduce the need to re-vaccinate individuals that may be given potentially spoiled vaccines.

- * Don't assume the vaccines cannot be salvaged. Depending on manufacturer specifications, the vaccine may still be viable.
- * Each provider is individually responsible for contacting manufacturers to discuss whether his/her vaccines may have been compromised.
- * Do not discard spoiled or expired VFC vaccines. Please complete the *Vaccine Return and Transfer Form* (Section 2 of Provider Tool Kit) and return them to the Kansas VFC Program.

Any time vaccine is stored outside the recommended temperatures, follow the enclosed ***Vaccine Spoilage Checklist*** and complete the enclosed ***Emergency Response Worksheet***.

Vaccine Packing & Shipping

Avoid transporting vaccines as much as possible. The more often they are moved, the more likely it is that they might become spoiled. Despite your best efforts to keep vaccines in the refrigerator or freezer at all times, you may still have to transport them to another location.

IT IS VERY IMPORTANT TO MAINTAIN THE “COLD-CHAIN” WHEN MOVING VACCINES!!!!

Packaging Vaccines for Transport

A. Shipping vaccines to a new destination:

1. Obtain shipping materials:
 - a. Insulated Styrofoam container
 - b. Several ice or cool packs from the freezer
 - c. Temperature monitors (available through the Kansas VFC Program)
 - d. Several sheets of paper or other insulator (bubble wrap, foam wrap)



2. Place ice packs in the bottom of the insulated container. ***Varicella must be packaged with a minimum of 6 lbs. of dry ice.** Diluent should not be frozen but shipped/stored at room temperature or refrigerated. **Approval from the Kansas VFC Program is required to ship Varicella and Varicella shippers must be used.**
3. Place a layer of insulator (bubble wrap, foam wrap, or several sheets of

crumpled paper) on top of the ice packs so the vaccines do not directly touch them. If paper is used, there should be at least 4 layers between the ice and vaccine.

4. Place vaccines on top of insulator. Put the most heat-sensitive vaccines (like MMR) in the middle of the other vaccines and as close to the ice packs as possible.
5. Insert temperature monitors near the center of the vaccines, but not in direct contact with the ice packs.
6. Add another layer of insulator over the vaccines.
7. Insert another layer of ice packs on top of insulator and add more Insulator until the container is full, to keep the vaccine securely in place.
9. Secure the lid of the insulated container and seal with strapping tape.
10. Clearly label on the outside of the container “**Vaccine – Refrigerate Immediately**” (see attached label); or “**Freeze Immediately**” if Varicella is enclosed.
11. Deliver the vaccine immediately to the destination.
12. If shipping is needed, ship vaccine via **Priority Overnight Mail** either on *Monday, Tuesday or Wednesday* to ensure they reach the destination prior to the weekend.
NOTE: Some overnight carriers require that the sealed Styrofoam container be secured inside of a cardboard box to avoid possible puncture of the Styrofoam during transport.
13. For assistance, contact the Kansas VFC Program at (785) 296-5591.



B. Shipping vaccines to another Kansas VFC provider(s):

1. Obtain prior approval from the Kansas VFC Program and the receiving provider(s).

2. Schedule a time with the receiving provider(s) to ensure that someone will be available in the office to assist with the transfer.
3. Document on the Monthly Immunization Report (MIR) the name of the vaccine and the number of doses transferred. Remember to include the PIN # of the receiving VFC provider(s).
4. Follow the guidelines above for proper packaging and shipping instructions
5. Deliver the vaccine immediately to the Kansas VFC Program provider(s) via hand delivery or overnight carrier (within 24 hours).

Other Resources:

Guidelines for Vaccine Packing and Shipping. CDC 01/1997. – Kansas VFC Program at (785) 296-5591.

REMINDER:

If Varicella thaws it may be stored at 35-46° F, but must be used within 72 hours after thawing...

Do not refreeze it!

Avoid transporting Varicella because this vaccine is so fragile.



SOLID CARBON DIOXIDE (DRY ICE) WARNING!!

DON'T TOUCH DRY ICE - AND DON'T BREATH CARBON DIOXIDE (CO₂) GAS!

- ◆ Dry ice is extremely cold (-110°F). Avoid contact with exposed flesh, to avoid frostbite.
- ◆ Dry ice evaporates (sublimes) to form carbon dioxide gas which does not support life. It can cause respiratory distress and death by suffocation.
- ◆ Cold carbon dioxide gas is heavier than air, and can accumulate at floor level or in confined spaces, increasing the risk of suffocation. Early signs include difficulty breathing, or panting. Immediately move to an open area.
- ◆ Do not enter areas where carbon dioxide vapor may have accumulated without first testing for carbon dioxide and oxygen content.
- ◆ Do not store in a tight container. Pressure developed as solid evaporates (sublimes) could burst air-tight containers.
- ◆ Wear suitable clothing, goggles to protect eyes and thick gloves when handling. Provide adequate ventilation.
- ◆ Use only with equipment designed for low temperatures.
- ◆ First aid: in case of frostbite, obtain medical treatment immediately. If inhaled, move to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.



VACCINE MANAGEMENT

Recommendations for Handling and Storage of Selected Biologicals



Department of Health and Human Services

DTaP: Diphtheria Toxoid, Tetanus Toxoid, Acellular Pertussis Vaccine **DTaP/ACTHIB:** Diphtheria Toxoid, Tetanus Toxoid, Acellular Pertussis Vaccine Combined with Haemophilus Conjugate Vaccine **DTaP/HIB:** Diphtheria Toxoid, Tetanus Toxoid, Whole Cell Pertussis Vaccine Combined with Haemophilus Conjugate Vaccine**

Shipping Requirements

Should be shipped in insulated container. Maintain temperature at 2°-8°C (35°-46°F). **Do not freeze** or store vaccine in direct contact with refrigerant.

Condition on Arrival*

Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements

Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze**.

Shelf Life

Up to 18 months. Check date on vial or container.

Instructions for Reconstitution or Use

Shake vial vigorously before withdrawing each dose.

Shelf Life after Reconstitution, or Opening

Until outdated, if not contaminated.

Special Instructions

Rotate stock so that the shortest dated material is used first.

* If you have questions about the condition of the material at the time of delivery, you should:
1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer;

or 3) Notify the Kansas VFC Program at 785-296-5591.

**ACTHIB – Aventis Pasteur – Should be used within 24 hours of reconstitution if used alone or when reconstituted with Aventis Pasteur DTaP. If Aventis Pasteur DTaP is used to reconstitute ACTHIB, the TriHibit vaccine must be used within 30 minutes. Only Aventis Pasteur DTaP, or the diluent shipped with the product, may be used to reconstitute the Aventis Pasteur ACTHIB product.

Pedvax Hib-Merck- available in liquid one-dose vials good for 24 hours after reconstitution if kept at 2°-8°C (35°-46°F).



Hepatitis Vaccine: Hepatitis A and Hepatitis B

Shipping Requirements ***

Use insulated container. Must be shipped with refrigerant.

Condition on Arrival*

Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements

Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze.**

Shelf Life

Up to 3 years. Check date on vial or container.

Instructions for Reconstitution or Use

Shake vial vigorously before withdrawing each dose.

Shelf Life after Reconstitution, or Opening

Until outdated, if not contaminated.

Special Instructions

Rotate stock so that the shortest dated material is used first.



HiB or HBCV: Haemophilus Conjugate Vaccine

Shipping Requirements

Should be shipped in insulated container to help prevent **freezing**.

Condition on Arrival*

Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements

Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze** – this reduces potency.

Shelf Life

Up to 2 years. Check date on vial or container.

Instructions for Reconstitution or Use Reconstitute before use.

If the product requires reconstitution, record date of reconstitution on vial.

Use only diluent supplied.

Shelf Life after Reconstitution, or Opening

of Multidose Vials – Stable until date of expiration, if stored at 2°-8°C (35°-46°F) when not in use. **Single Dose Vials**** – Discard unused reconstituted vials after 24 hours.

Special Instructions

Rotate stock so that the shortest dated material is used first.

* If you have questions about the condition of the material at the time of delivery, you should: 1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the Kansas VFC Program at 785-2896-5591. **ACTHIB – Aventis Pasteur – Should be used within 24 hours of reconstitution if used alone or when reconstituted with Aventis Pasteur DTP. If Aventis Pasteur DTaP is used to reconstitute ACTHIB, the TriHibit vaccine must be used within 30 minutes. Only Aventis Pasteur DTP, DTaP, or the diluent shipped with the product, may be used to reconstitute the Aventis Pasteur ACTHIB product. Pedvax Hib- Merck- available in liquid one-dose vials good for 24 hours after reconstitution if kept at 2°-8°C (35°-46°F). ***Engerix by Glaxo SmithKline may be shipped without refrigerant for up to 96 hours as long as the vaccine does not exceed 86°F.



Influenza Vaccine

Shipping Requirements

Should be delivered in the shortest possible time. Should not be exposed to excessive temperatures.

Condition on Arrival*

Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements

Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze.**



IPV: Poliovirus Vaccine – Inactivated

Shelf Life

Formulated for use within current influenza season.

Instructions for Reconstitution or Use

Shake vial vigorously before withdrawing each dose.

Shelf Life after Reconstitution, or Opening

Until outdated, if not contaminated.

Special Instructions

Rotate stock so that the shortest dated vaccine is used first.

Shipping Requirements

Should be shipped in insulated container with refrigerant.

Condition on Arrival*

Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements

Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze**.

Shelf Life

Up to 18 months. Check date on package.

Instructions for Reconstitution or Use

Ampoule – 1 dose: Tap the ampoule to ensure that the solution is in the lower portion rather than in the neck of the ampoule. With

sterile needle and syringe, withdraw the contents of the ampoule into syringe, holding the ampoule in such a way that the point of the needle is kept immersed throughout the withdrawal.

Vial – 10 dose: Withdraw 0.5 cc of vaccine into separate sterile needle and syringe for each immunization.

Shelf Life after Reconstitution, or Opening

Ampoule: Discard if not used immediately.

Vial: Until outdated if not contaminated.

Special Instructions

Rotate stock so that the shortest dated vaccine is used first. The vaccine should be perfectly clear. Any vaccine showing particulate matter, turbidity, or change of color should be discarded.

* If you have questions about the condition of the material at the time of delivery, you should:

1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the Kansas VFC Program at 785-296-5591.



Measles Virus Vaccine, Mumps Virus Vaccine, Rubella Virus Vaccine MMR Vaccine: Measles/Mumps/Rubella MR Vaccine: Measles/Rubella

Shipping Requirements

Vaccine – Use insulated container. Must be shipped with refrigerant. Maintain at 10°C (50°F) or less. If shipped with dry ice, diluent must be shipped separately. **Diluent** – May be shipped with vaccine but **do not freeze**.

Condition on Arrival*

Should be below 10°C (50°F). If above this temperature, see instructions (*) below. **Do not use warm vaccine.** Refrigerate on arrival.

Storage Requirements

Vaccine may be stored separately from diluent. Store as follows: Vaccine – refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Protect from light at all times**, since such exposure may inactivate the virus. Diluent may be stored at 15°-30°C (59°-86°F) room temperature. **Do not Freeze. Special Note:** Freeze dried (lyophilized) vaccines may be maintained at freezer temperatures.

Shelf Life

Vaccine – Up to 2 years. Check date on container or vial.

Diluent – Check date on container or vial.

Instructions for Reconstitution or Use

Reconstitute just before using. Use **only** the diluent **supplied** to reconstitute the vaccine.

Single Dose Vials – Inject diluent into the vial of lyophilized vaccine and agitate to ensure thorough mixing. Withdraw entire contents into syringe and inject total volume of vaccine subcutaneously. **Multidose Vials** – Withdraw **all** diluent from vial into syringe. Inject into vial of lyophilized vaccine and agitate to ensure thorough mixing. **10-Dose Vials** – Withdraw 0.5cc of reconstituted vaccine into separate sterile needle and syringe for each immunization. Licensed for jet injector use. **50-Dose Vials** – Use on jet injector only, with dosage set at 0.5cc.

Shelf Life after Reconstitution, Thawing, or Opening

After reconstitution, use immediately or store in a dark place at 2°-8°C (35°-46°F). **Discard if not used within 8 hours.**

Special Instructions

Rotate stock so that the shortest dated vaccine is used first. **10-Dose Vials** – May be used for both jet injector and needle and syringe methods of immunization. **50-Dose Vials** – For jet injector use. Should not be utilized via needle and syringe method of immunization.

NOTE: All materials used for administering live virus vaccines should be burned, boiled, or autoclaved

prior to disposal.

* If you have questions about the condition of the material at the time of delivery, you should:

1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the Kansas VFC Program at 785-296-5591.



PCV7: Pneumococcal 7-valent Conjugate Vaccine

Shipping Requirements Should be shipped in insulated containers at 2°- 8° C (35°- 46° F) with temperature monitors.

Condition on Arrival* Should not have been **frozen**. Refrigerate upon arrival.

Storage Requirements Refrigerate immediately upon arrival. Store at 2°-8°C (35°-46°F) **Do not freeze**.

Shelf Life Up to 18 months. Check date on vial or container. **Instructions for Reconstitution and Use**

Vaccine should appear as a homogenous white suspension after vigorous shaking. The vaccine should be administered intramuscularly only.

Special Instructions This vaccine is a suspension containing adjuvant and, if after vigorous shaking, should not be used if the particles can not be resuspended.



Meningococcal Polysaccharide Vaccine, Groups A, C, Y, W-135

Shipping Requirements

Should be shipped in insulated containers with temperature monitors, via overnight courier. Powdered vaccine can tolerate up to 45° C (113° F) for 6-8 weeks. Coolant packs should be used to ship if the product is to shipped for a long trip or if there are extremes of ambient temperature expected during the shipping time.

Condition on Arrival*

Should not have been **frozen**. Refrigerate upon arrival.

Storage Requirements

Refrigerate immediately upon arrival. Store at 2°- 8° C (35°- 46° F). **Do not freeze**. Powdered form can tolerate 12 weeks at 37° C (98.6° F) and 6 to 8 weeks at 45° C (113° F).

Shelf Life

Expires within 18 months. Check date on vial or container.

Instructions for Reconstitution and Use

Reconstitute gently. This is a white powder that yields a clear colorless liquid when reconstituted with 0.5 ml of sterile water.

Shelf Life after Reconstitution or Opening

Use single dose vials within 24 hours of reconstitution. Unused portions of multi-dose vials may be refrigerated at 2°- 8° C (35°- 46° F) and used up to 10 days after reconstitution.

Special Instructions

Diluent to be used is sterile water for injection with 0.01% thimerosal. Reconstituted vaccine should be injected subcutaneously, or with a jet injector device only. Do not inject intradermally, intramuscularly, or intravenously.

* If you have questions about the condition of the material at the time of delivery, you should:
1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the Kansas VFC Program at 785-296-5591.



Pneumococcal Polysaccharide Vaccine: Polyvalent

Shipping Requirements

Should be shipped in insulated container with refrigerant. **Do not freeze**.

Condition on Arrival*

Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements

Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F) **Do not freeze.**

Shelf Life

Up to 2 years. Check date on container or vial.

Instructions for Reconstitution or Use

Vials — Shake vial vigorously before withdrawing each dose. **Prefilled Syringes** — Follow manufacturer's directions.

Shelf Life after Reconstitution, or Opening

Until outdated, if not contaminated.

Special Instructions

Rotate stock so that the shortest dated vaccine is used first. **Do not inject intravenously.** Intradermal administration may cause severe local reactions and should be avoided.



Td: Adult: Tetanus-Diphtheria Toxoids **DT:** Pediatric: Diphtheria-Tetanus Toxoids

Shipping Requirements

Should be shipped in insulated container. Maintain temperature at 2°-8°C (35°-46°F). **Do not freeze** or store vaccine in direct contact with refrigerant.

Condition on Arrival*

Should not have been **frozen**. Refrigerate on arrival.

Storage Requirements

Refrigerate immediately on arrival. Store at 2°-8°C (35°-46°F). **Do not freeze.**

Shelf Life

Up to 2 years. Check date on vial or container.

Instructions for Reconstitution or Use

Shake vial vigorously before withdrawing each dose.

Shelf Life after Reconstitution, Thawing, or Opening

Until outdated, if not contaminated.

Special Instructions

Rotate stock so that the shortest dated vaccine

is used first.

* If you have questions about the condition of the material at the time of delivery, you should:
1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the Kansas VFC Program at 788-296-5591.

Varicella (Chickenpox) Vaccine

Shipping Requirements

Ship with dry ice only. Should be delivered within 2 days.

Conditions on Arrival*

Should be frozen. Vaccine should remain at -20°C (-5°F) until arrival at health care facility. Dry ice should still be present in the shipping container when vaccine is delivered. See footnote below.

Storage Requirements

Maintain in a continuously frozen state at -15°C (5°F) or colder. **No freeze thaw cycles are allowed with this vaccine.** Vaccine should only be stored in freezers or refrigerator/freezers with separate doors and compartments. Acceptable storage may be achieved in standard household freezers purchased in the last 10 years, and standard household refrigerator/freezers with a separate, sealed freezer compartment. In order to maintain this temperature it will be necessary in most refrig

Careful monitoring of the refrigerator temperature to avoid freezing killed or inactivated vaccines will be necessary.

Shelf Life

Up to 18 months. Check date on package and use the earliest expiration date first.

Instructions for Reconstitution or Use

This product is a lyophilized (freeze dried) product and should only be reconstituted with the diluent provided with the vaccine. This vaccine must be used within 30 minutes of reconstitution or should be discarded.

Special Instructions

If this vaccine is stored at a temperature warmer than -15°C, it will result in a loss of potency and a reduced shelf life. If a power outage or some other situation occurs that results in the vaccine storage temperature rising above the recommended storage, the health care provider should contact Merck, the manufacturer, at 1-800-9-827-4829 for a

erator/freezer models to turn the temperature dial down to the coldest setting. This may result in the refrigerator compartment temperature being lowered as well.

re-evaluation of the products potency before using the vaccine.

- If you have questions about the condition of the material at the time of delivery, you should:
1) Immediately place material in recommended storage; and 2) Notify the Quality Control office of the vaccine manufacturer; or 3) Notify the Kansas VFC Program at 785-296-5591.

More on Immunizations:

Kansas Immunization Program

<http://www.kdheks.gov/immunize>

(785)296-5591

CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)

National Immunization Program

www.cdc.gov/vaccines

CDC NATIONAL IMMUNIZATION INFORMATION HOTLINE

Recommendations, Referrals, FREE Publications

(800) 232-2522

(English) (800)

232-0233

(Spanish)

IMMUNIZATION ACTION COALITION

www.immunize.org

EPIDEMIOLOGY AND PREVENTION OF VACCINE-PREVENTABLE DISEASES - Tenth Edition (PINK BOOK)

Department of Health and Human Services, Centers for Disease Control and Prevention

<http://bookstore.phf.org>

PROTECT YOUR VACCINE SUPPLY!

DO:

- Store vaccine at proper temperatures.
- Maintain daily log of temperature checks.
- Conduct monthly inventory counts.
- Train staff for vaccine care.
- Store & rotate vaccines according to expiration date.
- Order sensibly.
- Label vaccines "VFC" - store on a separate shelf.
- Establish "Emergency Handling Plan".
- Post "Do NOT Unplug" signs by plugs & circuit breaker.
- Provide back up power or alarm system.
- Contact VFC if you won't use vaccine within 90 days of expiration.
- Contact the Utah VFC Program if you have questions at 801-538-9450.

DON'T:

- Assume vaccines can't be salvaged - contact manufacturers - see *Emergency Response Worksheet*.
- Return viable VFC vaccines to the Utah VFC Program. Transfer them to another VFC provider.
- Discard expired or spoiled VFC vaccines.
- Never use outdated vaccines. Always check expiration dates.
- Store food/beverage in vaccine refrigerator.
- Record temperatures out of range and do nothing.
- Store vaccines in refrigerator door or in crispers.
- Store Varicella vaccine in a dorm-style refrigerator/freezer.
- Use a dormitory style refrigerator.
- Throw away temperature logs.

Vaccine Manufacturer Numbers:

Aventis-Pasteur.....	1-800-822-2463
Bayer Corporation.....	1-800-288-8371
GlaxoSmithKline.....	1-800-825-5249
Merck & Co.....	1-800-672-6372
Wyeth.....	1-800-999-9384